

What is Claimed is:

1. A circuit-toy assembly kit for constructing an electronic circuit, comprising a plurality of connector units, wherein each of said connector units comprises:

5 a supporting frame having a first side and an opposed second side;

at least two an electric conductive terminal fasteners spacedly affixed to said supporting frame, wherein each of said terminal fasteners has an inserting head upwardly extended from said first side of said supporting frame and a socket housing integrally extended from said inserting head and defining a receiving socket on said second side of
10 said supporting frame, wherein said inserting head is shaped and sized corresponding to said receiving socket so as to allow said inserting head of said terminal fastener to insert into said receiving socket of another said terminal fastener in a detachably connecting manner; and

a terminal circuit supported by said supporting frame to electrically connect said
15 terminal fasteners with each other;

wherein each of said terminal fasteners further comprises a resilient element formed at an opening portion of said receiving socket for applying a retaining force against said inserting head of another said terminal fastener when said inserting head of another said terminal fastener is inserted into said receiving socket of said terminal
20 fastener, so as to securely connect said two connector units in an electrical connecting manner;

wherein said connector units are selectively connected with each other to form said electronic circuit by detachably inserting said inserting head of said terminal fastener of one of said connector units into said receiving socket of said terminal fastener of
25 another said connector unit to structurally connect said supporting frames with each other and to electrically connect said terminal circuits with each other so as to form said electronic circuit.

2. The circuit-toy assembly kit, as recited in claim 1, wherein said inserting head of each of said terminal fasteners has a mounting disc mounted on said first side of said supporting frame, a narrowed neck portion upwardly and integrally extended from said mounting disc, and an enlarged buckle head having a diameter substantially larger than said narrowed neck portion, wherein said receiving socket of said terminal fastener of said connector unit is shaped and sized for detachably receiving and retaining said inserting head of said terminal fastener of another said connector unit therein.

3. The circuit-toy assembly kit, as recited in claim 1, wherein each of said socket housings has a circular loop shoulder formed around said opening portion of said receiving socket to define a circular chamber surrounding said opening portion of said receiving socket and two opposed guiding slots provided along a sidewall of said opening portion of said receiving socket to communicate with said circular chamber of said loop shoulder, wherein said resilient element has two S-shaped end portions and a semi-circular middle arc portion connected between said two ends portions being arranged inside said circular chamber of said loop shoulder, wherein said middle arc portion of said resilient element is propped against an outer wall of said loop shoulder to support two straight end tails of said two end portions respectively extending into said receiving socket of said socket housing through said two guiding slots, wherein said two end tails are parallelly disposed to define a distance therebetween and smaller than a diameter of said receiving socket, such that when said inserting head is inserted into the receiving socket, said two end tails of said resilient element are bounced outwardly along said guiding slots respectively to allow said buckle head of said inserting head to pass between said two end tails of said resilient element while said two end tails of said resilient element are retained at said narrowed neck portion of said inserting head so as to retain said inserting head within said receiving socket.

4. The circuit-toy assembly kit, as recited in claim 2, wherein each of said socket housings has a circular loop shoulder formed around said opening portion of said receiving socket to define a circular chamber surrounding said opening portion of said receiving socket and two opposed guiding slots provided along a sidewall of said opening portion of said receiving socket to communicate with said circular chamber of said loop shoulder, wherein said resilient element has two S-shaped end portions and a semi-circular middle arc portion connected between said two ends portions being arranged inside said circular chamber of said loop shoulder, wherein said middle arc portion of said resilient element is propped against an outer wall of said loop shoulder to support

two straight end tails of said two end portions respectively extending into said receiving socket of said socket housing through said two guiding slots, wherein said two end tails are parallelly disposed to define a distance therebetween and smaller than a diameter of said receiving socket, such that when said inserting head is inserted into the receiving
5 socket, said two end tails of said resilient element are bounced outwardly along said guiding slots respectively to allow said buckle head of said inserting head to pass between said two end tails of said resilient element while said two end tails of said resilient element are retained at said narrowed neck portion of said inserting head so as to retain said inserting head within said receiving socket.

10 5. The circuit-toy assembly kit, as recited in claim 1, wherein at least one of said connector units further a circuit functional element substantially supported by said supporting frame to electrically connect with said terminal circuit for performing a predetermined circuit function when said electronic circuit is formed.

15 6. The circuit-toy assembly kit, as recited in claim 2, wherein at least one of said connector units further a circuit functional element substantially supported by said supporting frame to electrically connect with said terminal circuit for performing a predetermined circuit function when said electronic circuit is formed.

20 7. The circuit-toy assembly kit, as recited in claim 4, wherein at least one of said connector units further a circuit functional element substantially supported by said supporting frame to electrically connect with said terminal circuit for performing a predetermined circuit function when said electronic circuit is formed.

25 8. The circuit-toy assembly kit, as recited in claim 2, further comprising an assembly platform having a plurality of guiding members spacedly and upwardly protruded thereon to detachably insert into said receiving sockets of said terminal fasteners respectively, wherein said connector units are selectively mounted to said assembly platform to form said electronic circuit on said assembly platform.

30 9. The circuit-toy assembly kit, as recited in claim 4, further comprising an assembly platform having a plurality of guiding members spacedly and upwardly protruded thereon to detachably insert into said receiving sockets of said terminal fasteners respectively, wherein said connector units are selectively mounted to said assembly platform to form said electronic circuit on said assembly platform.

10. The circuit-toys assembly kit, as recited in claim 7, further comprising an assembly platform having a plurality of guiding members spacedly and upwardly protruded thereon to detachably insert into said receiving sockets of said terminal fasteners respectively, wherein said connector units are selectively mounted to said assembly platform to form said electronic circuit on said assembly platform.

11. The circuit-toys assembly kit, as recited in claim 8, wherein said assembly platform, which is made of dielectric material, functions as an insulating supporting platform to support said connector units thereon.

12. The circuit-toys assembly kit, as recited in claim 9, wherein said assembly platform, which is made of dielectric material, functions as an insulating supporting platform to support said connector units thereon.

13. The circuit-toys assembly kit, as recited in claim 10, wherein said assembly platform, which is made of dielectric material, functions as an insulating supporting platform to support said connector units thereon.

14. The circuit-toys assembly kit, as recited in claim 8, wherein said two terminal fasteners of said connector units has a predetermined distance that when said connector unit is mounted on said assembly platform, said terminal fasteners are fittingly engaged with said two corresponding guiding members so as to substantially retain said connector unit on said assembly platform to electrically connect with another said connector unit.

15. The circuit-toys assembly kit, as recited in claim 10, wherein said two terminal fasteners of said connector units has a predetermined distance that when said connector unit is mounted on said assembly platform, said terminal fasteners are fittingly engaged with said two corresponding guiding members so as to substantially retain said connector unit on said assembly platform to electrically connect with another said connector unit.

16. The circuit-toys assembly kit, as recited in claim 13, wherein said two terminal fasteners of said connector units has a predetermined distance that when said connector unit is mounted on said assembly platform, said terminal fasteners are fittingly engaged with said two corresponding guiding members so as to substantially retain said

connector unit on said assembly platform to electrically connect with another said connector unit.

17. A connector unit for constructing an electronic circuit, comprising:

a supporting frame having a first side and an opposed second side; and

5 at least an electric conductive terminal fastener affixed to said supporting frame, wherein said terminal fastener has an inserting head upwardly extended from said first side of said supporting frame and a socket housing integrally extended from said inserting head and defining a receiving socket on said second side of said supporting frame, wherein said inserting head is shaped and sized corresponding to said receiving
10 socket;

whereby said connector unit is adapted to structurally and electrically connect with another said connector unit from said electronic circuit by detachably inserting said inserting head of said terminal fastener of said connector unit into said receiving socket of said terminal fastener of another said connector unit to structurally connect said
15 supporting frames with each other and to electrically connect said terminal fasteners with each other so as to form said electronic circuit.

18. The connector unit, as recited in claim 17, wherein said inserting head of said terminal fastener has a mounting disc mounted on said first side of said supporting frame, a narrowed neck portion upwardly and integrally extended from said mounting
20 disc, and an enlarged buckle head having a diameter substantially larger than said narrowed neck portion, wherein said receiving socket of said terminal fastener of said connector unit is shaped and sized adapted for detachably receiving and retaining said inserting head of said terminal fastener of another said connector unit therein.

19. The connector unit, as recited in claim 18, wherein said terminal fastener
25 further comprises a resilient element formed at an opening portion of said receiving socket for applying a retaining force against said inserting head of another said terminal fastener when said inserting head of another said terminal fastener is inserted into said receiving socket of said terminal fastener.

20. The connector unit, as recited in claim 19, wherein said socket housing has a circular loop shoulder formed around said opening portion of said receiving socket to define a circular chamber surrounding said opening portion of said receiving socket and two opposed guiding slots provided along a sidewall of said opening portion of said receiving socket to communicate with said circular chamber of said loop shoulder, wherein said resilient element has two S-shaped end portions and a semi-circular middle arc portion connected between said two ends portions being arranged inside said circular chamber of said loop shoulder, wherein said middle arc portion of said resilient element is propped against an outer wall of said loop shoulder to support two straight end tails of said two end portions respectively extending into said receiving socket of said socket housing through said two guiding slots, wherein said two end tails are parallelly disposed to define a distance therebetween and smaller than a diameter of said receiving socket.

21. The connector unit, as recited in claim 17, further comprising a circuit functional element substantially supported by said supporting frame to electrically connect with said terminal fastener for performing a predetermined circuit function when said electronic circuit is formed.

22. The connector unit, as recited in claim 20, further comprising a circuit functional element substantially supported by said supporting frame to electrically connect with said terminal fastener for performing a predetermined circuit function when said electronic circuit is formed.